Usefulness of the zung self-rating depression scale for schizophrenics

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Abstract : Objective : This study was performed to provide psychometric data concerning the Zung Self-Rating Depression Scale (SDS) when administered to schizophrenics. Methods : The subjects were 110 schizophrenic inpatients (50 females and 60 males) who were diagnosed according to the DSM-IV criteria for schizophrenia. Informed consent was obtained from all subjects. Results : 1) Cronbach's alpha for the SDS was .81, and reached the acceptable range for internal consistency. 2) Test-retest reliability coefficient for the total SDS was comparatively high (Spearman's ρ=.87, p<.001, N=19), but those for SDS items revealed variability among items. 3) The mean total SDS score for the 15 patients with depression was significantly different from the group of patients without depression. 4) None of the 20 items or total SDS was significantly correlated with extra-pyramidal symptoms. Conclusions : Overall, the findings demonstrate the usefulness of the SDS for schizophrenics. However, due to findings of mixed reliability, caution should be exercised when using the SDS for these patients. J. Med. Invest. 46 : 75-78, 1999

Key words **:** *Zung Self-Rating Depression Scale, schizophrenia, reliability, validity*

INTRODUCTION

Depressive features are clearly recognized within the context of schizophrenia (1, 2), and clarification of the comorbidity has important clinical implications particularly when choosing the best neuroleptics for treatment. However, in some cases, it is difficult to clearly distinguish between depressive symptoms, negative symptoms and extrapyramidal side-effects (3, 4), resulting in the poor correlation between self-reports and observer reports on depression (5). Therefore, self-rating scales may be more effective than observer rating scales to assess depression in schizophrenic patients.

The Zung Self-Rating Depression Scale (SDS) (6) is a self-reporting scale composed of 20-item scales that was developed to measure depressive symptoms using 4-point scales. The SDS was originally designed to assess depression in patients with depressive disorders. Psychometric research has provided substantial evidence on the reliability and validity of the SDS with normal subjects and patients with depressive disorders (7). However, data on the psychometric properties of the SDS with schizophrenic subjects are in sufficient. This investigation was designed to replicate and extend extant findings regarding the psychometric properties of the SDS among schizophrenics.

METHODS

The subjects were 110 medicated schizophrenic inpatients (50 females and 60 males) that met the DSM (Diagnostic and Statistical Manual of the American Psychiatric Association)-IV (8) diagnostic criteria for schizophrenia. Informed consent was obtained from all subjects. The mean age of the subjects was 49.6 years (SD=11.5, range 18-76) (Table1). The mean duration of illness was 19.5 years (SD= 10.7, range 1-53). The presence or absence of depression was determined using the DSM-IV criteria.

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At the time of assessment, 15 subjects showed depressive signs and 95 subjects did not.

Test-retest reliability was assessed for 19 patients; retests were conducted within a mean period of 17.0 days (SD=5.6, range 8-25) after the first test.

Extrapyramidal symptoms (EPS) were assessed for 97 patients using the Drug Induced Extra-Pyramidal Symptoms Scale (DIEPSS) (9, 10), which was recently established in Japan. The DIEPSS is composed of eight individual parameters and one global assessment constructed to measure EPS, using 5-point scales. The mean rating of overall severity was 1.1 (SD=0.9, range 0-3) (Table 1).

Statistical analyses were performed using non-parametric tests (Mann Whitney's U-test, Spearman rank correlations).

Table 1. Demographic characteristics of subjects

		N	Age(yr) Mean±SD	Duration of illness (yr) Mean±SD	EPS (N=97) Mean±SD	Total SDS scores Mean±SD
Schizophrenics	Total	110	49.6±11.5	19.5±10.7	1.1± .9	40.2±9.5
	Depression (+)	15	49.1±12.3	17.9±10.8	1.1±1.0	51.0±6.1***
	Depression (-)	95	49.6±11.5	19.8±10.7	1.1± .9	38.5±8.8

SDS=the Zung Self-Rating Depression Scale ; EPS=extrapyramidal symptoms.
***p< .001 versus schizophrenics without depression by the Mann Whitney's U-test.

Table 2. SDS scores and correlation coefficients

	Schizophrenics			Rs 1	Rs 2
	Total Mean±SD	Depressed Mean±SD	Non-depressed Mean±SD		
Total	40.2±9.5	51.0±6.1***	38.5±8.8	.87†††	.06
Item- 1 (Depressed affect)	1.7± .9	2.2±1.0*	1.6± .9	.34	−.01
Item- 2 (Diurnal variation)	2.2±1.3	3.1±1.1**	2.1±1.2	.72††	−.07
Item- 3 (Crying spells)	1.4± .7	1.8±1.1*	1.3± .6	−.09	.09
Item- 4 (Sleep disturbance)	1.7± .9	2.1±1.1	1.6± .9	−.09	.13
Item- 5 (Decreased appetite)	1.5± .9	1.3± .8	1.5± .9	.84††	.06
Item- 6 (Decreased libido)	3.2±1.0	3.1±1.1	3.2±1.0	.50†	−.04
Item- 7 (Weight loss)	1.8±1.0	1.9±1.1	1.8±1.0	.50†	.12
Item- 8 (Constipation)	1.7±1.1	2.3±1.3*	1.6±1.0	.64††	.04
Item- 9 (Tachycardia)	1.4± .7	1.7± .7*	1.3± .7	.92†††	−.01
Item-10 (Fatigue)	20.±1.0	2.8± .9***	1.9± .9	.62†	−.02
Item-11 (Confusion)	2.2±1.2	3.2± .9***	2.1±1.2	.80††	−.11
Item-12 (Psychomotor retardation)	2.1±1.2	2.7±1.2*	2.0±1.2	.72††	−.07
Item-13 (Psychomotor agitation)	1.7±1.0	2.4±1.2**	1.6±1.0	.68††	.17
Item-14 (Hopelessness)	3.0±3.9	3.1±1.1	3.0±4.1	.61†	.14
Item-15 (Irritability)	1.5± .8	2.3± .9***	1.4± .7	−.09	−.03
Item-16 (Indecisiveness)	2.7±1.2	3.6± .6***	2.5±1.1	.34	−.11
Item-17 (Personal devaluation)	2.6±1.2	3.3±1.1*	2.5±1.2	.66††	.05
Item-18 (Emptiness)	2.4±1.2	3.3±1.0**	2.2±1.2	.86††	.06
Item-19 (Suicidal rumination)	1.5±1.0	2.0±1.1**	1.5± .9	.62†	.06
Item-20 (Dissatisfaction)	2.5±1.2	3.1±1.2*	2.4±1.2	.85††	−.02

Rs1=test-retest reliabililty coefficients by Spearman rank correlations ;
Rs2=coefficients of correlations between SDS scores and EPS by Spearman rank correlations.
*p<.05, **p<.01 and ***p<.001 versus schizophrenics without depression by the U-test ;
†p<.05, ††p<.01 and †††p<.001 by Spearman rank correlations.

RESULTS

Table 2 shows means and standard deviations of the SDS for the whole sample, the subset of patients without depression and the smaller subset of patients with depression.

1. Internal Consistency

Cronbach's alpha (11) was used to determine the internal consistency of the SDS. Cronbach's alpha for the SDS was .81, and reached the acceptable range for internal consistency.

2. Temporal Stability

Test-retest reliability was calculated for a subset of 19 patients without depression. Spearman rank correlations for the total SDS scores and each SDS item score were, in ascending order, total=.87 ($p<.001$), item-1=.34, item-2=.72 ($p<.01$), item-3=-.09, item-4=-.09, item-5=.84 ($p<.001$), item-6=.50 ($p<.05$), item-7=.50 ($p<.05$), item-8=.64 ($p<.01$), item-9=.92 ($p<.001$), item-10=.62 ($p<.05$), item-11=. 80 ($p<.01$), item-12=.72 ($p<.01$), item-13=.68 ($p<.01$), item-14=.61($p<.05$), item-15=-.09, item-16=.34, item-17=.66 ($p<.01$), item-18=.86 ($p<.001$), item-19=.62 ($p<.05$) and item-20=.85 ($p<.001$) (Table 2). The correlation for the total SDS was clear, but the coefficients for the SDS items revealed variability among items.

3. Validity

Using the Mann Whitney's U-test, the mean total SDS score for the 15 patients with depression was significantly different from the group of patients without depression, with p being <.001.

4. Relationships between SDS scores and EPS

Spearman rank correlations for the total SDS scores and each SDS item score were, in ascending order, total=.06, item-1=-.01, item-2=-.07, item-3=.09, item-4=.13, item-5=.06, item-6=-.04, item-7=.12, item-8=.04, item-9=-.01, item-10=-.02, item-11=-.11, item-12=-.07, item-13=.17, item-14=.14, item-15=-.03, item-16=.11, item-17=.05, item-18=.06, item-19=.06 and item-20=-.02 (Table2). None of the 20 items or total SDS was significantly correlated with EPS.

DISCUSSION

In an assessment of psychiatric symptoms, self-reports and/or observer rating scales are frequently used. In particular, observer rating scales are useful, when the levels of psychiatric symptoms are assessed. However, in a schizophrenic sample, prior research has indicated inconsistent agreement between self-reports and observer rating scales of depression. Craig and van Natta (5) reported that schizophrenics revealed no significant correlation between four self-report scales and an observer rating scale of depressed mood. In contrast, when self-report scales are intercorrelated, patients showed highly significant correlations. These results indicated difficulty in assessing depressive symptoms in schizophrenia by observer rating scales to assess depression in schizophrenics. One of the main reasons for the difficulty was the possible overlap with negative symptoms and extrapyramidal side-effects. Prosser *et al*. (3) reported that negative symptoms were significantly correlated with some features of depression in schizophrenics, and Van Putten and May (4) reported that patients who developed akinesia with antipsychotic drugs exhibited a significant increase in depressive ratings. Therefore, considering these results and my findings in clinical practice, self-rating scales may be more effective than observer rating scales to assess depression in schizophrenic patients. Thus, the psychometric potential of the SDS, one of the commonly used self-rating scales, was investigated.

In the present study, the internal consistency of the SDS in schizophrenics was high. The test-retest reliability coefficient for the total SDS in schizophrenics was also as high as that in normal subjects ($r=.85$, $N=34$) as shown by Fukuda and Kobayashi (7). However, test-retest reliability coefficients for the SDS items revealed variability among items. These reliability coefficients suggest that scores on some of the items changed substantially from test to retest. This result may be explained by the possibility that the test-retest interval in some patients was too long and the mental condition of the patients changed slightly due to their psychotic symptoms. In addition, none of the 20 items or total SDS was significantly correlated with extrapyramidal symptoms.

Overall, the findings demonstrate the usefulness of the psychometric properties of assessment instruments when used with populations other than those for which they were designed. However, due to findings of mixed reliability, caution should be exercised when using the SDS with schizophrenics.

Although the SDS is a valuable tool for the assessment of depression, the presence or absence of depression must be carefully determined, not by a

scale alone. Moreover, observer rating scales are appropriate in patients who are unable to complete self-rating scales.

CONCLUSION

The SDS is a useful tool to evaluate depression in schizophrenics, although caution should be exercised when it is employed.

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